83125

RESULTS OF SOIL SAMPLING OF BLOCK 106A, LOT 21

MARCH 1988

FOR

EIGHTY ASSOCIATES

EAST RUTHERFORD, NEW JERSEY

ACOE, APPLICATION/# 87-921-J1

SUBMITTED BY:

PAULUS SOKOLOWSKI and SARTOR INC
CONSULTING ENGINEERS & PLANNERS

67A MOUNTAIN BOULEVARD EXTENSION
P.O. BOX 4039
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March 3, 1988
0448-0022-04

Thomas J. O'Connor, Esq.
Waters, McPherson, McNeill, Fitzpatrick, P.C.
400 Plaza Drive
Secaucus, New Jersey 07024

Re: Eighty Associates
Results of Soil Sampling
Block 106A, Lot 21
East Rutherford, Bergen County, N.J.
ACOE Application No. 87-921-J1

Dear Mr. O'Connor:

In response to the request of the U.S. Army Corps of Engineers (ACOE) and the U.S. Environmental Protection Agency (USEPA), Paulus, Sokolowski and Sartor, Inc. (PS&S) is pleased to submit this report on the results of the soil sampling of Block 106A, Lot 21, East Rutherford, New Jersey. Lot 21 is the proposed site of wetland mitigation and enhancement excavations.

The soil sampling plan and sampling procedures followed the specification given by USEPA at the meeting of November 24, 1987. Chemical analysis of soil samples was performed in accordance with the PS&S letter of November 24, 1987, which was transmitted to the ACOE and USEPA for review and comment. Additionally, all soil samples were analyzed at a USEPA CLP laboratory to provide the highest level of assurance.

The results of the soil sampling analyses identified few concerns. Bulk levels of potential concern for mercury and arsenic in the site soils were not found in the results of the soil sampling analyses. Soil PCB concentrations were not significant. Leachate analyses established that chemical parameters evaluated in the soil samples were not chemically mobile and that there would be no significant impact on the use of Lot 21 for mitigation and enhancement purposes.

In response to unexpected soil concentrations of cadmium and total chromium, PS&S performed additional site investigations of Lot 21. These additional investigations identified the existence of four outfalls

discharging adjacent to Lot 21. Subsequent water samples of these outfalls indicated the presence of cadmium and chromium in one of the outfalls, thus providing an explanation of the unexpected presence of cadmium and chromium in soil samples of Lot 21. A further review of the soil concentrations of cadmium and chromium was also completed. Since all leachate sample results were indicative of non-hazardous soils, any cadmium and chromium concentrations can be safely addressed by its removal in a controlled manner during site mitigation.

In summary, all of the issues raised by ACOE and USEPA at the meeting of November 24, 1987, have been addressed. The PS&S sampling does not confirm the presence of significant contamination. Overall, further sampling of the other two Eighty Associates' sites is not warranted.

If there are any questions or additional information is needed, please contact PS&S.

Very truly yours,

PAULUS, SOKOLOWSKI & SARTOR, INC.

John T Bolan

John T. Bolan, P.E.

P. Steve Oliver, Associate &
Division Manager
Environmental Permitting & Planning

JTB/PSO:rj
cc: J. Zimbalist, Eighty Assocs.

RESULTS OF SOIL SAMPLING OF BLOCK 106, LOT 21

EIGHTY ASSOCIATES
EAST RUTHERFORD, NEW JERSEY
#448-0022-04

Prepared by:

PAULUS, SOKOLOWSKI & SARTOR, INC.
March 3, 1988

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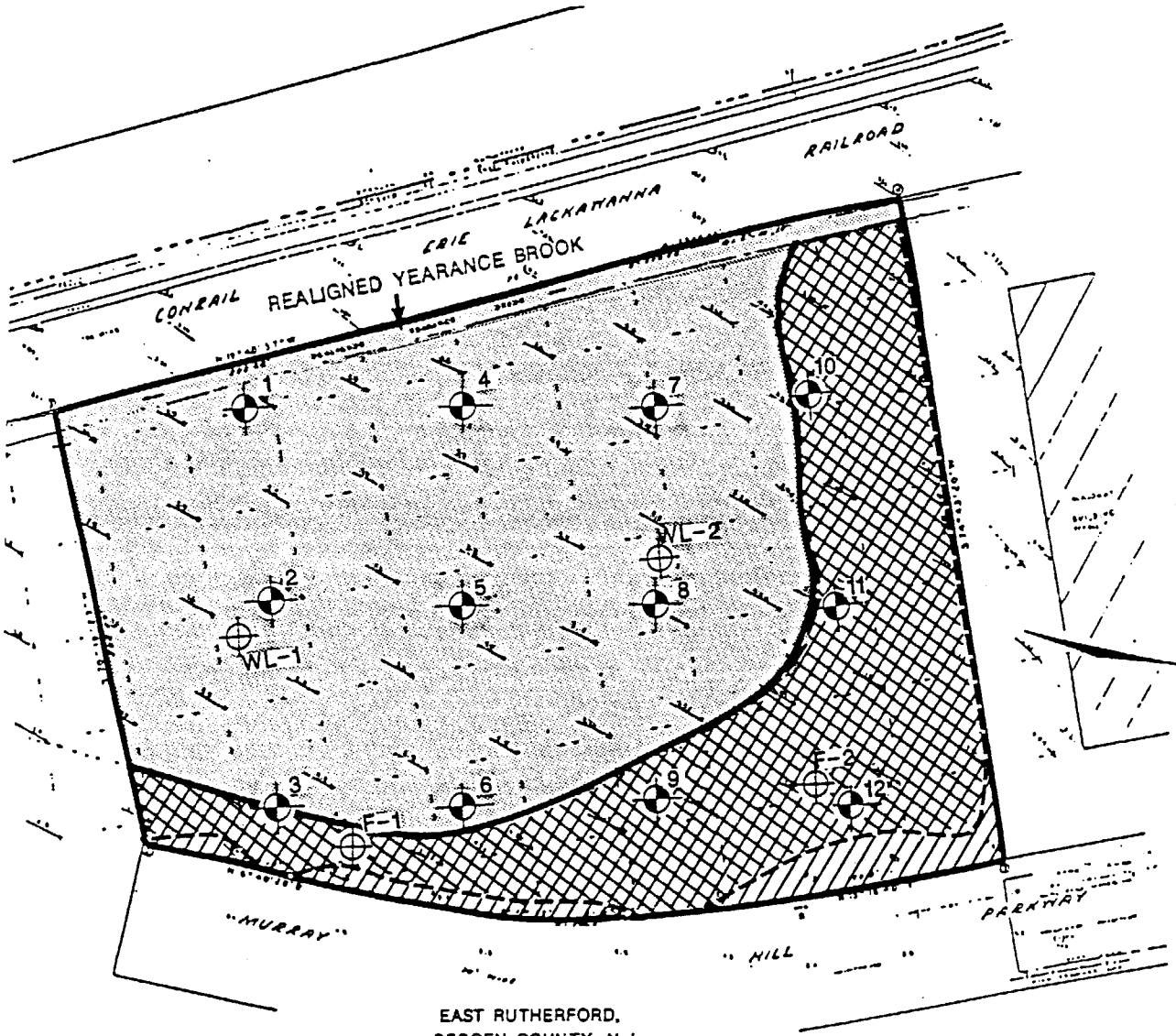
1.0 INTRODUCTION

In accordance with our meeting of November 24, 1987, with James Haggerty of U.S. Army Corps of Engineers (ACOE) and Kathleen Drake and Jim Schmittberger of U.S. Environmental Protection Agency (USEPA), Paulus, Sokolowski and Sartor, Inc. (PS&S) prepared an additional soil sampling plan for Block 106A, Lot 21, East Rutherford, New Jersey (proposed mitigation site of Eighty Associates). A copy of this plan, including proposed sampling procedures and sampling locations, was transmitted to the ACOE and USEPA on December 1, 1987. The soil sampling plan contained the procedures stated at the November 24, 1987, meeting and no modifications were requested by ACOE or USEPA.

2.0 PROPOSED SAMPLING PLAN

In the PS&S soil sampling plan for Block 106A, Lot 21, PS&S proposed the acquisition of soil samples from 12 locations on the subject site. Following the procedure required by USEPA at the 11/24/87 meeting, sample locations were spaced in a grid pattern, 100 feet on centers (see attached Figure #1). At each of the sample locations, one foot individual/discrete samples were proposed to be acquired at depths of 0 to 1 foot and 3 to 4 feet. The lower samples, at 3 to 4 feet, were designed to simulate an approximate depth of one foot below proposed wetland mitigation and enhancement excavations. This approach follows guidance provided by Dr. Richard Lee of the ACOE Waterways Experiment Station for another site in the Berry's Creek Basin.

The PS&S sampling plan proposed that the soil samples would receive both bulk dry weight and USEPA extraction analyses. Bulk and extraction samples would both receive laboratory analyses for arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver. PCB analyses would only be performed on the bulk samples.



EAST RUTHERFORD,
BERGEN COUNTY, N.J

SOIL SAMPLING PLAN FOR LOT 21

NOTE: SURVEY BASE MAP BY SABETAY BEHAR L.S. LIC. NO. 15103 MAY 21,1986

LEGEND

- SITE BOUNDARY
- FILLED/UPLAND AREAS TO BE EXCAVATED & PLANTED WITH WETLANDS VEGETATION*
- WETLANDS ENCHANCEMENT AREA IN ACOE JURISDICTION
- FILLED/UPLAND AREA TO BE EXCAVATED & PLANTED WITH WETLANDS VEGETATION
- WETLAND JURISDICTION LINE

* APPROVED BY ACOE

KEY

- SAMPLE LOCATIONS IN 12/86 INVESTIGATION
- SAMPLE LOCATIONS IN 12/87 INVESTIGATION

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EIGHTY ASSOCIATES

SOIL SAMPLING LOCATION PLAN
LOT 21 BLOCK 106A

DATE 1/22/88	JOB NO. 448-022
SCALE AS SHOWN	
DRAWN M.R.	SHEET NO. 1
CHKD. JTB/SO	

83125008

3.0 IMPLEMENTATION OF SAMPLING PLAN

Sampling locations were determined from a scaled version (1"=60') of the Location Map, previously filed with the ACOE and USEPA. Starting from reference points on Murray Hill Parkway and the ConRail right-of-way, a surveying rod and a calibrated surveyor's steel tape were used to locate each of the twelve auger borings. On December 16, 1987, two PS&S hydrogeologists began the soil sampling of Lot 21 and completed sampling at Locations #1 through #6. The remaining six locations were completed on December 17, 1987.

At each sampling location, soil samples were acquired at the depths proposed in the PS&S sampling plan by means of stainless steel hand-augers. However, due to the higher ground elevations encountered in the existing fill areas of Lot 21, it was necessary to deepen the lower sampling depth to 4 to 5 feet at locations #9 through #12. This approach was used to insure that all lower soil samples were in the same plane throughout Lot 21, and would accurately reflect a uniform depth of approximately one foot below proposed wetland mitigation and enhancement excavations.

All field sampling was governed by the procedures described in the "Field Sampling and Procedures Manual," July 1986, NJDEP Division of Hazardous Site Mitigation and in the USEPA Region II Guidance Document (4/27/87), distributed at the 11/24/87 meeting. For the field sampling on Lot 21, PS&S personnel wore disposable coveralls, boots, and gloves. Disposable coveralls and boots were discarded at the end of each field day or as necessary if splashed. Two layers of gloves were used. The outer glove layer was discarded following the acquisition of each soil sample to discourage cross-contamination between sampling intervals. Hand-augers were decontaminated prior to the commencement of field activities and between sampling intervals. The decontamination procedure explicitly followed the USEPA Region II Guidance Document.

Soil samples were transported by PS&S personnel, under chain-of-custody, to the U.S. Testing Company, Hoboken, N.J., on December 17,

1987. The U.S. Testing Company (USTC) is a USEPA CLP laboratory. USTC previously performed the analysis on the four soil samples acquired by PS&S from Lot 21 on November 25, 1986.

4.0 SAMPLING RESULTS AND ANALYSIS

Preliminary results from USTC were received by PS&S on January 6, 1988. Following standard procedures, PS&S requested that USTC check and verify all results, prior to submission of a final report. USTC's final report was received on January 7, 1988, and all of the preliminary results were confirmed in the USTC final report.

The results found in USTC's final report are displayed in the attached Table 1. Table 1 contains a reorganization of USTC's data, permitting a direct comparison between bulk and leachate results for the purposes of assessing chemical mobility. Three types of comparisons were used in the analysis of the 12/87 sample results shown in Table 1. The bulk samples were compared to the NJDEP Environmental Cleanup Responsibility Act (ECRA) Guidelines. Although Lot 21 is not subject to specific review by the ECRA group of NJDEP, the use of the ECRA Guidelines allows a comparison of the contaminant levels found in the 12/87 sampling, with the ECRA limits normally used as an indicator of remedial actions. For the review of mercury bulk samples, the ECRA Guidelines were supplanted by a level of 10 mg/kg as an acceptable "regional background."[1] The use of this "regional background" reflects the higher levels of mercury caused by discharges of the former Wood-Ridge Chemical Corp. plant into the Berry's Creek Basin. A third type of comparison was utilized in the evaluation of leachate results. In this comparison, the USEPA regulations, (40 CFR Part 261.24), which are used to identify hazardous wastes, were compared to the results of the EP toxicity analyses.

An overview of the data contained in Table 1 indicates that only a small percentage of the twenty-four samples had levels of potential concern. As a general rule, contaminants were found in the upper sample (0 to 1 foot) only (see attached Figure #2). Instead of reflecting higher levels of mercury and arsenic contamination, the upper samples at 10 of the 12 sample locations generally reflected levels of cadmium and chromium. The presence of these cadmium and chromium levels in only the

[1]USEPA has informally identified a criterion of 10 mg/kg, as determined by bulk testing procedures, for the identification of an "acceptable" level of mercury in the soils of the Berry's Creek Basin (personal communication, D. Suszkowski, USEPA).

upper samples suggests that Lot 21 is impacted by waterborne contaminants, especially since portions of Lot 21 flood during storms and spring high tides. (As described in Section 6.0 herein, PS&S conducted additional investigations for cadmium and chromium contamination and has determined that a source of waterborne contamination is in existence adjacent to Lot 21.)

In our analysis of the soil sample data displayed in Table 1, we have focused on four basic issues discussed at the 11/24/87 meeting. First, concern was expressed by the ACOE and USEPA regarding the presence of "high levels" of mercury and arsenic on Lot 21 and the accuracy of the previous non-gridded sampling by PS&S in December 1986. Second, the USEPA had questioned the potential of impacts on the Eighty Associates' sites by PCB discharges from a former chemical plant. Although PS&S had indicated that there was no hydraulic connection between the Eighty Associates' sites and this former chemical plant, the USEPA continued to question the level of PCB's on the Eighty Associates' sites. The issue of chemical mobility and its impact on a proposed mitigation plan was previously raised by the USEPA on other sites in the Berry's Creek Basin. Lastly, the matter of additional sampling on the two remaining Eighty Associates' sites was also a concern of ACOE and USEPA.

The levels of mercury and arsenic found in the 12/87 samples are generally not significant. Of the bulk samples, only one of the mercury samples (#1B) was in excess of the 10 mg/kg "regional background." This one sample had a concentration of 30.4 mg/kg. Sample #1B is the nearest sample site to Yearance Brook, a tidal tributary of Berry's Creek and would be expected to have the highest concentration due to its closer proximity to Berry's Creek. The remaining 23 bulk mercury samples range in concentration from <.1 to 8.9 mg/kg, with 3.075 mg/kg representing the average of all 24 samples. This average bulk mercury concentration compares well with the results of the 12/86 PS&S samples. None of the twenty-four bulk arsenic samples were above the 20 mg/kg ECRA guideline.

Bulk arsenic concentrations ranged between <1.0 and 15.0 mg/kg, with 6.24 mg/kg representing the average. For comparison with the bulk mercury and arsenic samples, the leachate results, represented by the EP Tox samples, indicated that all of the arsenic and mercury results were less than the method detection limits of .03 mg/kg for arsenic and .01 mg/kg for mercury. Evaluated together, the bulk and leachate test results for arsenic and mercury indicate that in situ levels of contaminants have no significant impact on the existing environment.

To assess the accuracy of the previous 12/86 PS&S samples, a comparison of the 12/86 and 12/87 PS&S samples was prepared and is displayed in Table 2. For each of the four 12/86 sample locations, the nearest adjacent location in the 12/87 sampling was selected. The results of bulk and leachate testing were then tabulated. An analysis of these tabulations reveals substantial agreement between the 12/86 and 12/87 results. Thus, we believe that the accuracy of the 12/86 results and conclusions are substantiated.

Following up the discussions on PCB impacts at the 11/24/87 meeting, PS&S has confirmed that there is no hydraulic or physical connection between the former chemical plant and the Eighty Associates' sites. Samples taken in the 12/87 sampling provide further confirmation. Of the 24 soil samples, seventeen samples were identified by USTC as having no detectable concentration of PCB. Only one of the PCB samples had a detectable concentration that reached the ECRA Guideline of 1 to 5 mg/kg. At the reported concentration of 1.2 mg/kg, this result is considered to be insignificant and would be unlikely to trigger remedial action at a site subject to ECRA review. Therefore, we find that the impact of PCB's on Lot 21 is not significant.

In our previous analysis of arsenic and mercury, we noted the lack of chemical mobility of these two contaminants. A review of the test results for the other six metals also indicates a lack of chemical mobility. Of the 144 soil samples for these six metals, 112 samples had results below their respective method detection limits. The remaining 32 sample results, with detectable concentrations, were all less than 3% of

the maximum limits set by the USEPA regulations, 40 CFR Part 261.24. This analysis leads to a conclusion that in situ metal contaminants are not mobile and have no significant impact on the existing environment.

In its application to the ACOE, Eighty Associates has proposed Lot 21, sampled in 12/87, as a wetlands mitigation and enhancement site. Techniques of excavation, regrading and vegetative plantings will be used to create a more viable and enhanced wetland environment. Excavations, as deep as 3 feet, will be completed and, as a result, significant volumes of in situ soils will require movement. However, the demonstrated lack of chemical mobility eliminates any potential adverse impacts on the environment that could result from handling in situ soils. Thus, we find that the proposed wetlands mitigation can be completed without any threat to the environment.

We do, however, recommend that any excavations of soils on Lot 21 be conducted in a controlled manner due to the bulk concentration levels of some contaminants. All excavated soils should not be reused and should be properly disposed off-site. Since these soils can easily pass the criteria of 40 CFR Part 261, a suitable non-hazardous waste disposal facility can serve as the ultimate off-site disposal location. A secure disposal site will not be required.

It should be noted that the 12/87 sampling results generally determined that bulk concentrations of potential concern of cadmium and chromium were present in the first foot of the in situ soils of Lot 21. Planned excavations of about 3 feet for wetland mitigation will remove this cadmium and chromium contamination. If these excavated soils are properly disposed off-site, an additional benefit of contamination remediation will be gained.

TABLE 1 SAMPLING RESULTS[1]
Analysis Parameters

Location		Arsenic		Barium		Cadmium		Chromium		Lead		Mercury		Selenium		Silver		Total PCB
		Bulk[4]	EPTox[5]	Bulk	EPTox	Bulk	EPTox	Bulk	EPTox	Bulk	EPTox	Bulk	EPTox	Bulk	EPTox	Bulk	EPTox	Bulk
1	A[2]	8.5	<.03	65.0	.1	4.4*	.03	110.0*	<.01	90.0	<.03	7.1	<.01	<1.0	<.03	<1.0	<.01	N.D.
	B[3]	3.6	<.03	15.0	.03	2.1	<.01	7.6	<.01	14.0	<.03	30.4	<.01	<1.0	<.03	<1.0	<.01	N.D.
2	A	11.0	<.03	59.0	.08	3.9*	<.01	147.0*	.1	92.0	<.03	3.6	<.01	<1.0	<.03	<1.0	<.01	N.D.
	B	1.4	<.03	13.0	.02	<1.0	<.01	6.4	<.01	5.0	<.03	<0.1	<.01	<1.0	<.03	<1.0	<.01	N.D.
3	A	4.4	<.03	20.0	<.01	3.1*	<.01	16.0	<.01	38.0	<.03	0.4	<.01	<1.0	<.03	<1.0	<.01	N.D.
	B	3.1	<.03	13.0	.04	<1.0	<.01	3.2	<.01	4.2	<.03	<0.1	<.01	<1.0	<.03	<1.0	<.01	N.D.
4	A	7.9	<.03	19.0	.02	3.1*	<.01	130.0*	.02	60.0	<.03	.6	<.01	<1.0	<.03	<1.0	<.01	.05
	B	2.3	<.03	6.5	.01	<1.0	<.01	3.1	<.01	< 1.0	<.03	<0.1	<.01	<1.0	<.03	<1.0	<.01	N.D.
5	A	12.0	<.03	42.0	.02	2.9	<.01	188.0*	.02	59.0	<.03	5.0	<.01	<1.0	<.03	<1.0	<.01	N.D.
	B	1.2	<.03	6.5	.01	<1.0	<.01	5.0	<.01	2.4	<.03	<0.1	<.01	<1.0	<.03	<1.0	<.01	N.D.
6	A	9.2	<.03	103.0	.09	7.8*	<.01	267.0*	.04	171.0*	.17	3.5	<.01	<1.0	<.03	<1.0	<.01	N.D.
	B	6.9	<.03	123.0	.04	3.0	<.01	52.0	<.01	65.0	<.03	<0.1	<.01	<1.0	<.03	<1.0	<.01	1.2*
7	A	10.0	<.03	83.0	.04	4.6*	<.01	307.0*	.14	21.0	.13	4.5	<.01	<1.0	<.03	<1.0	<.01	.07
	B	<1.0	<.03	46.0	.01	4.0*	<.01	157.0*	<.01	< 1.0	<.03	<0.1	<.01	<1.0	<.03	<1.0	<.01	N.D.
8	A	10.0	<.03	50.0	.03	2.0	<.01	103.0*	<.01	22.0	<.03	1.5	<.01	<1.0	<.03	<1.0	<.01	N.D.
	B	<1.0	<.03	14.0	.02	<1.0	<.01	3.7	<.01	< 1.0	<.03	<0.1	<.01	<1.0	<.03	<1.0	<.01	N.D.

TABLE 1 SAMPLING RESULTS (cont.)
Analysis Parameters

Location		Arsenic Bulk[4]	Arsenic EPTox[5]	Barium Bulk	Barium EPTox	Cadmium Bulk	Cadmium EPTox	Chromium Bulk	Chromium EPTox	Lead Bulk	Lead EPTox	Mercury Bulk	Mercury EPTox	Selenium Bulk	Selenium EPTox	Silver Bulk	Silver EPTox	Total PCB Bulk
9	A	15.0	<.03	67.0	.02	4.2*	<.01	96.0	.01	7.5	<.03	1.5	<.01	<1.0	<.03	<1.0	<.01	.23
	B	14.0	<.03	71.0	.06	3.7*	<.01	94.0	<.01	21.0	<.03	8.9	<.01	<1.0	<.03	<1.0	<.01	.04
10	A	5.0	<.03	33.0	.02	2.5	<.01	177.0*	.05	31.0	.07	0.5	<.01	<1.0	<.03	<1.0	<.01	.10
	B	<1.0	<.03	7.7	.01	<1.0	<.01	2.4	<.01	2.3	<.03	<0.1	<.01	<1.0	<.03	<1.0	<.01	N.D.
11	A	3.2	<.03	14.0	<.01	<1.0	<.01	5.3	<.01	10.0	<.03	<0.1	<.01	<1.0	<.03	<1.0	<.01	N.D.
	B	1.7	<.03	22.0	.01	<1.0	<.01	11.0	<.01	3.0	<.03	<0.1	<.01	<1.0	<.03	<1.0	<.01	N.D.
12	A	6.3	<.03	49.0	.13	2.6	<.01	60.0	.06	13.0	<.03	3.2	<.01	<1.0	<.03	<1.0	<.01	.06
	B	10.0	<.03	95.0	<.01	4.0*	<.01	85.0	<.01	12.0	<.03	2.1	<.01	<1.0	<.03	<1.0	<.01	N.D.

NOTES

1. Source of data is United States Testing Company report of January 7, 1988.
2. A = Soil sample of 0 to 1 foot at the indicated location.
3. B = Soil sample of 3 to 4 feet, at locations #1 thru #8 and 4 to 5 feet, at locations #9 thru #12.
4. Bulk = Dryweight concentration in the soil matrix, reported as mg/kg.
5. EPTox = Leachate from soil matrix, resulting from extraction (USEPA SW-846), reported as mg/l.
6. * = Exceeds NJDEP ECRA guideline[7], used for comparison, even though project site is not subject to ECRA.
7. NJDEP ECRA Guidelines = Cadmium, 3mg/kg; Chromium, 100mg/kg; Lead, 100mg/kg; Selenium, 4mg/kg; Silver, 5mg/kg; Arsenic, 20mg/kg and Total PCB, 1 to 5mg/kg.
8. ___ = Above 10mg/kg "regional background" for Mercury.
9. ** = Above 40 CFR part 261.24 limits (Arsenic, 5.0mg/l; Barium, 100.0mg/l; Cadmium, 1.0mg/l; Chromium, 5.0mg/l; Lead, 5.0mg/l; Mercury, 0.2mg/l; Selenium, 1.0mg/l and Silver, 5.0mg/l).
10. N.D. = None Detected by analysis.

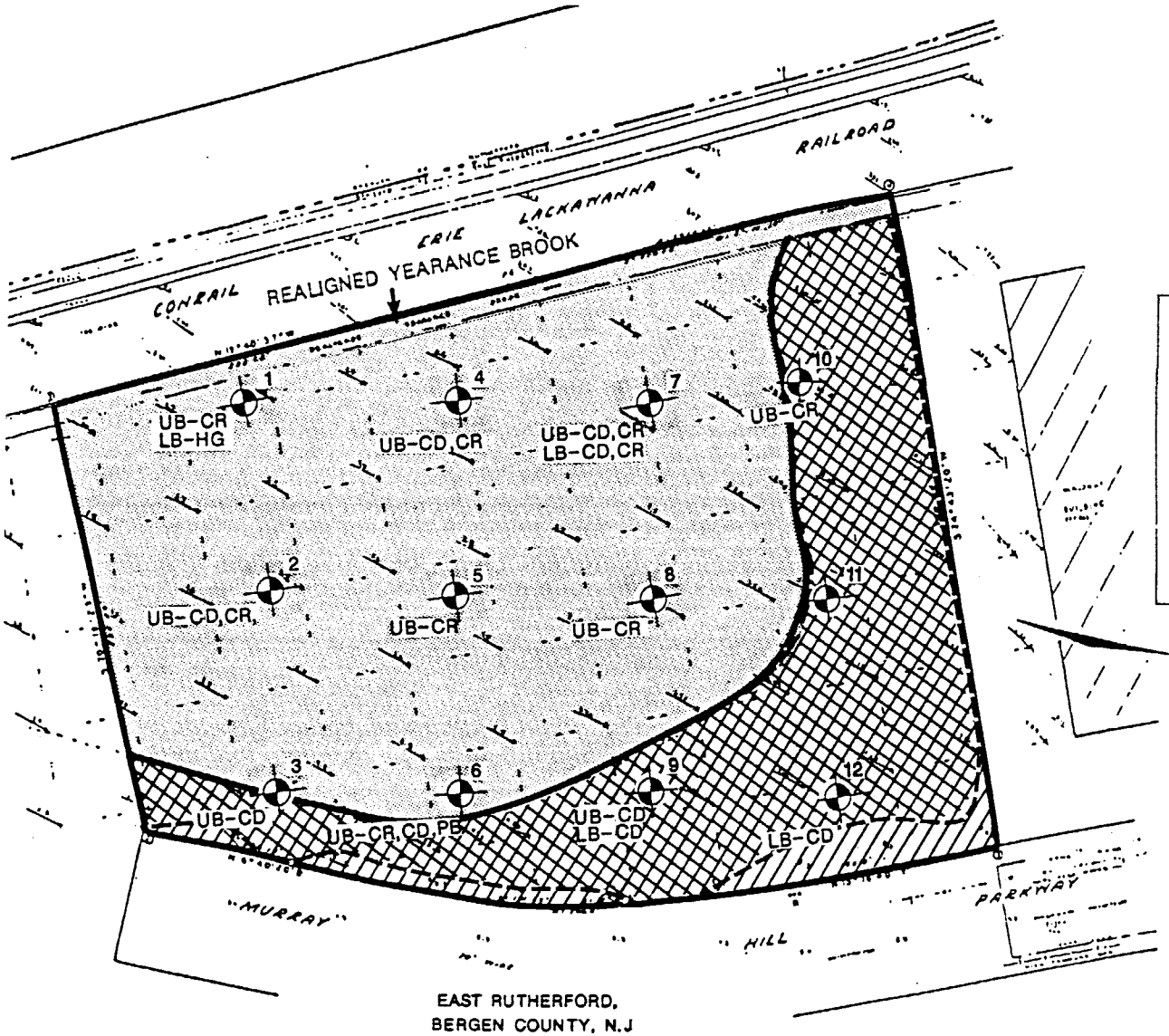
TABLE 2 COMPARISON OF 12/86 AND 12/87 SAMPLING

Analysis Parameters

Location[4]#	Sample Date	Arsenic		Barium		Cadmium		Chromium		Lead		Mercury		Selenium		Silver		Total PCB
		Bulk[3]	EPTox[4]	Bulk	EPTox	Bulk	EPTox	Bulk	EPTox	Bulk	EPTox	Bulk	EPTox	Bulk	EPTox	Bulk	EPTox	Bulk
#2A	12/87[3]	11	<.03	59.0	.08	3.9	<.01	147.0	.1	92.0	<.03	3.6	<.01	<1.0	<.03	<1.0	<1.0	N.D.
WL-1,S1	12/86[2]	----	<.03	----	.04	----	<.01	----	.02	----	<.03	3.13	.006	----	<.03	----	<.01	----
#3A	12/87	4.4	<.03	20.0	<.01	3.1	<.01	16.0	<.01	38.0	<.03	.4	<.01	<1.0	<.03	<1.0	<.01	N.D.
F-1, S1	12/86	----	<.03	----	.45	----	<.01	----	<.01	----	<.03	.72	.002	----	<.03	----	<.01	----
#8A	12/87	10.0	<.03	50.0	.03	2.0	<.01	103.0	<.01	22.0	<.03	1.5	<.01	<1.0	<.03	<1.0	<.01	N.D.
WL-2,S1	12/86	----	----	----	----	----	----	----	----	----	----	2.34	----	----	----	----	----	----
#12A	12/87	6.3	<.03	49.0	.13	2.6	<.01	60.0	.06	13.0	<.03	3.20	<.01	<1.0	<.03	<1.0	<.01	0.6
F-2, S1	12/86	----	<.03	----	.11	----	<.01	----	<.01	----	<.03	3.78	<.001	----	<.03	----	<.01	----

NOTES

1. See notes from Table 1.
2. 12/86 = Samples completed on Lot 21 by PS&S on November 25, 1986.
3. 12/87 = Samples completed on Lot 21 by PS&S on December 17, 1987.
4. Source of the United States Testing Company reports of December 5, 1986 and January 7, 1988.
5. Adjacent locations in the 12/86 and 12/87 sampling are shown.



LEGEND

- SITE BOUNDARY
- FILLED/UPLAND AREAS TO BE EXCAVATED & PLANTED WITH WETLANDS VEGETATION*
- WETLANDS ENCHANCEMENT AREA IN ACOE JURISDICTION
- FILLED/UPLAND AREA TO BE EXCAVATED & PLANTED WITH WETLANDS VEGETATION
- WETLAND JURISDICTION LINE

KEY

- 12/87 SAMPLING LOCATION
- U - UPPER SAMPLE (0 TO 1 FOOT)
- L - LOWER SAMPLE (3 TO 4 FEET, LOCATIONS #1 THRU #8; 4 TO 5 FEET, LOCATIONS #9 THRU #12)
- B - BULK DRYWEIGHT ANAYSIS
- E - EPTOXICITY LEACHATE ANAYSIS

METALS FOUND IN APPRECIABLE LEVELS

- CD - CADIUM
- CR - CHROMIUM
- HG - MERCURY
- PB - LEAD

PAULUS SOKOLOWSKI and SARTOR INC
CONSULTING ENGINEERS
674 MOUNTAIN BOULEVARD EXTENSION
P.O. BOX 4039
WARREN, NEW JERSEY 07060

EIGHTY ASSOCIATES

MITIGATION SITE

LOT 21 BLOCK 106A

DATE 1/22/88	JOB NO. 446-022
SCALE AS SHOWN	
DRAWN M.R.	SHEET NO. 2
CHKD. JTB/SO	

EAST RUTHERFORD,
BERGEN COUNTY, N.J

IMPORTANT RESULTS OF THE 12/87 SOIL SAMPLING PLAN FOR LOT 21

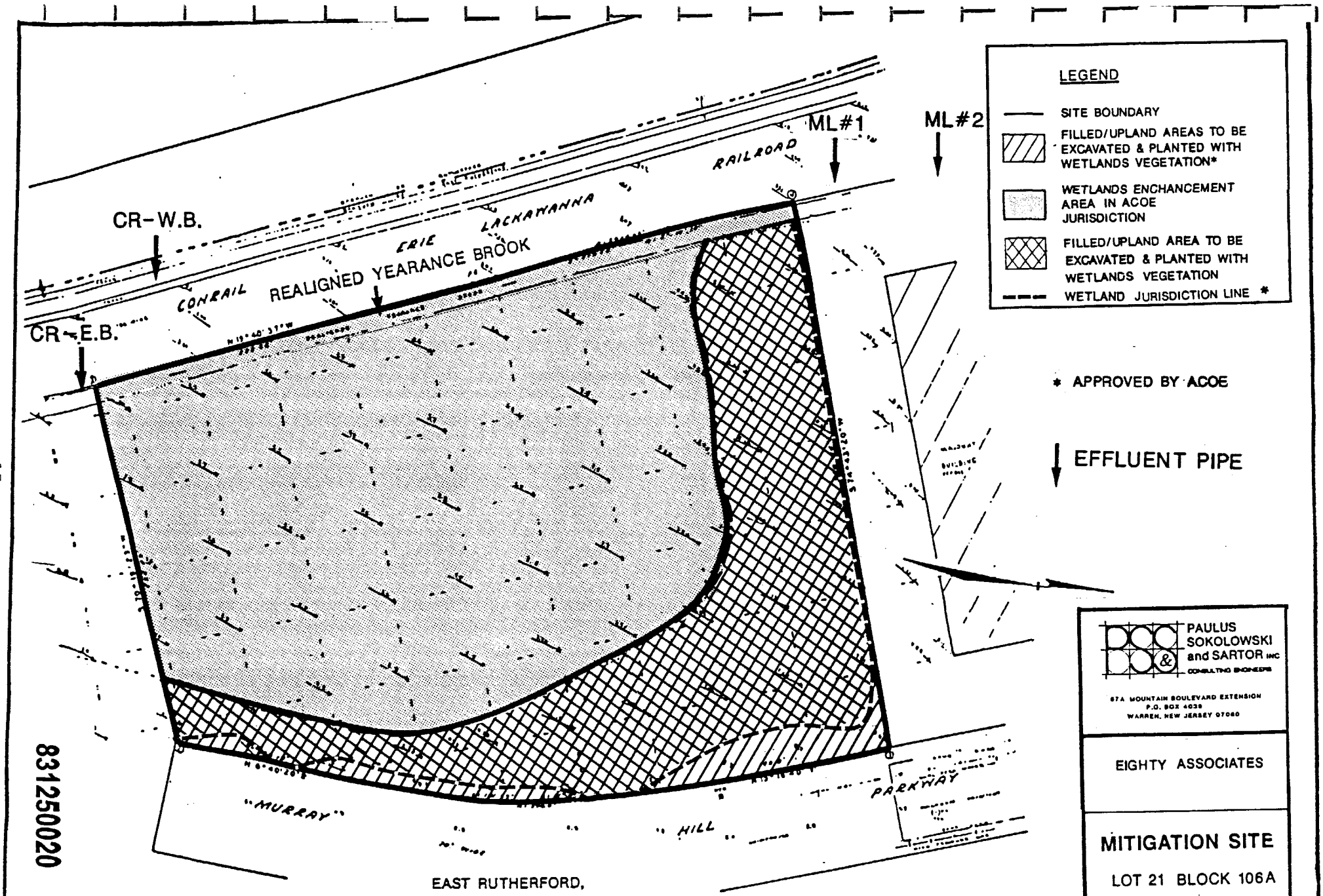
NOTE: SURVEY BASE MAP BY SABETAY BEHAR L.S. LIC. NO. 15103 MAY 21,1986

831250018

5.0 ADDITIONAL INVESTIGATIONS

Responding to the unexpected presence of cadmium and chromium in upper soil samples of Lot 21, PS&S conducted two additional investigations on January 25 and 27, 1988, focusing on identifying potential sources of waterborne contaminants. A walking tour of Yearance Brook, a tidal waterbody on the westerly boundary of Lot 21, and properties adjacent to Lot 21, was conducted. Particular emphasis was given to the two discharge pipes previously observed by PS&S during wetlands studies of Lot 21.

During the PS&S investigations, the previously-observed pipes and two other discharge pipes were sampled and photographed by PS&S personnel. The locations of these discharge pipes are shown in Figure 3. Specially-prepared bottles were provided by USTC for the water samples. As with the soil samples, PS&S personnel transported the water samples at the end of each day to USTC, under chain-of-custody procedures. USTC was requested to analyze each of the four water samples for chromium (total) and cadmium, in accordance with current USEPA laboratory procedures.



EAST RUTHERFORD,
BERGEN COUNTY, N.J

OBSERVED DISCHARGE POINTS IN THE VICINITY OF LOT 21

NOTE: SURVEY BASE MAP BY SABETAY BEHAR L.S. LIC. NO. 15103 MAY 21,1986

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EIGHTY ASSOCIATES

MITIGATION SITE
LOT 21 BLOCK 106A

DATE 2/10/88	JOB NO. 448-022
SCALE AS SHOWN	
DRAWN M.R.	SHEET NO. 3
CHKD. JTB/SO	

83125020

6.0 RESULTS OF ADDITIONAL INVESTIGATIONS

Results of the water sample analyses were received in two USTC reports, dated February 1 and 8, 1988. These results were compared to NJDEP ECRA guidelines for chromium (total) and cadmium in water. A tabulation of this comparison is displayed in attached Table 3.

Of the four sample sites, only sample site CR-E.B., had detectable results. When compared to the ECRA guidelines, the CR-E.B. sample had a chromium concentration of seven times the ECRA guideline and a cadmium concentration of one and one-half times the ECRA guideline. Thus, a probable source of waterborne contamination has been identified. Its location and direct input into Yearance Brook also provides an explanation for the observed higher levels of chromium and cadmium found in the first foot at ten of the soil sample sites.

The higher bulk concentrations of cadmium and chromium, we believe, are, therefore, a localized anomaly. An effluent pipe, discharging cadmium and chromium directly adjacent to Lot 21, was observed and photographed by PS&S personnel during field inspections. No other such pipes were found during investigations of the other Eighty Associates' sites, Lots 4D and 19. Additionally, a review of soil samples taken by HMDC in the Berry's Creek Basin (Galluzzi, et al) over a period of seven years fails to confirm the higher levels of cadmium and chromium found at Lot 21. Thus, it is our opinion that these cadmium and chromium concentrations are a likely result of effluent discharges onto Lot 21.

Without similar observations of pipe discharges adjacent to the other Eighty Associates' sites, it is also our opinion that cadmium and chromium concentrations of potential concern on these two sites are unlikely, due to the distances of these sites from the identified probable discharge source south of Lot 21. Therefore, further sampling of Lots 4D and 19 for cadmium and chromium is not warranted.

TABLE 3 WATER SAMPLE RESULTS[1]

Sample Site	Cadmium (ppb) Sample Result	Cadmium (ppb) ECRA Limit	Chromium (ppb) Sample Result	Chromium (ppb) ECRA Limit
ML#1[2]	<2.3	10	<3.6	50
ML#2[3]	<2.3	10	<3.6	50
CR-E.B.[4]	16.1	10	374.0	50
CR-W.B.[5]	<2.3	10	<3.6	50

NOTES

1. The source of data is the United States Testing Company reports of February 1 and 8, 1988.
2. ML#1 = Industrial plant discharge pipe.
3. ML#2 = Industrial plant discharge pipe.
4. CR-E.B. = Discharge pipe at most southwest corner of Lot 21.
5. CR-W.B. = Discharge pipe approximately 50 feet west of CR-E.B.
6. Blanks results on 1/25 and 1/28/88: Cadmium = <2.3ppb and Chromium = <3.6ppb.
7. ppb = parts per billion

7.0 SUMMARY AND CONCLUSIONS

In summary, we believe that all of the issues raised by ACOE and USEPA have been addressed. The 12/87 sampling of Lot 21 does not confirm the presence of significant contamination. Since all leachate sample results were indicative of non-hazardous soils, any contamination found in the 12/87 sampling can be safely addressed by its removal in a controlled manner during site mitigation. Overall, further sampling of the other two Eighty Associates' sites is not warranted.